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GEOGRAPHICAL RECORD

AMERICAN GEOGRAPHICAL SOCIETY

Additions to the Society's Map Collection. A large number of British Admiralty charts were recently added to the map collection. They were selected in such a manner that with their acquisition all of the charted coasts of the world are now represented in the Society's series. It is proposed to increase this collection from time to time by adding the largest-scale charts of important regions. This will be done, in part, by means of U. S. Hydrographic Office charts, all the recently issued sheets of which have been purchased. Furthermore, the entire set of charts issued by this office for South American waters was recently purchased.

Pursuing its policy of maintaining an unbroken chronological sequence in the maps of a given region, the Society has lately added a number of photostatic copies of notable American maps to its collection. These reproductions have the same size as the originals and are quite convenient for working purposes. Among them are:

Augustin Hermann's Map of Virginia and Maryland, 1673

Captain John Smith's Map of Virginia and Maryland, 1608

Filson's Map of Kentucky, 1784

Bernard Roman's Map of Florida, 1774

John Fitch's Map of the Northwest, 1785

Thomas Pound's Map of New England, 1691

John With's Map of Virginia, 1585

The Vingboom Map of New York, 1639

The Des Barres Map of Penobscot Bay, 1776.

NORTH AMERICA

Further News of the Explorer Radford's Death. The death of Harry V. Radford, the explorer, at the hands of Eskimos on or about June 5, 1912, at Bathurst Inlet on the Arctic coast of Canada was noted in the *Bulletin of the American Geographical Society* for December, 1913 (pp. 924-925). This information was based on Eskimo reports to the Royal North West Mounted Police. As a consequence a party of five mounted policemen was sent out two years ago to apprehend the slayers. News has recently been received from Mr. John I. Inglis of Ottawa that the culpable Eskimos have not yet been found; the police, however, obtained important information which promises an early successful termination of the search. The first party is being relieved by a second party of mounted police which sailed from Montreal on August 9 for Hudson Bay. The most reliable information with regard to Radford's death was contained in a report from H. H. Hall, manager of the Hudson Bay Company's trading post at Chesterfield Inlet on the northwestern shore of the bay, a copy of which was sent to the Society and portions of which were published in the newspapers at the time Radford's will was probated in New York City, October 5, 1915. According to this report, the murder occurred just as the explorer was setting out on a sledge journey. One of the two local Eskimos who had been engaged for the journey had already started when the other refused to go. To enforce obedience, Radford struck him with the handle of a whip; a fight ensued and Radford was speared in the back by another native. T. George Street, Radford's white companion, made a run for the sledge to get a gun but was killed before he could reach it. From the story told Mr. Hall by his informant, a civilized Eskimo who had met members of the Bathurst Inlet tribe a few days later, it seems that the man refused to go because his wife had become suddenly ill. Radford was not familiar with the language of this tribe and must have misunderstood the man's meaning. Blows once dealt, the rest followed quickly, as, in their primitive state, these Eskimos generally settle quarrels and disputes with the death of one of the combatants.

References to the primitive state of this tribe are contained in a letter from Radford to this Society, dated June 5, 1912, the probable date of his death, in which he said: "We found a very primitive tribe of Eskimos inhabiting Bathurst Inlet, who have no intercourse with whites. They possess no rifles, and hunt, as of old, with the bow, spear, and harpoon; use stone kettles and knives of hammered native copper; and strike fire with stones and tinder, or by rubbing a pointed stick into another piece of wood until the latter becomes heated enough to ignite. They speak a dialect very

different from that of the inland Eskimos and those who dwell near Hudson Bay; and Mr. Street and I find it difficult to communicate with them."

Radford was thirty-one years old at the time of his death. He became a Life Fellow of this Society in 1908. In 1909 he set out upon the expedition on which he was engaged when he was killed. His main work was zoölogical, but he made it a point to maintain track surveys of his route, an undertaking in which his training as a civil engineer gave him proficiency. In this way he was able, in no inconsiderable degree, to rectify the maps of the regions he had traversed. His route lay from Lake Athabaska, down the Slave River to Great Slave Lake; thence northeast and eastward via Artillery Lake, the lower Thelon River, and Schultz and Baker Lakes to Chesterfield Inlet on Hudson Bay. From that place he traveled back, retracing his steps for part of the journey and then striking northwest until he reached Bathurst Inlet on the Arctic coast of Canada. There, shortly before his death, he surveyed the western coast of the inlet as far north as $67^{\circ} 15' N.$; and it was his wish to complete the survey of this, "the last strip remaining unexplored of the continental coast of North America," as he himself expressed it. The completion of this gap, left open by the Franklin expedition in 1821, by the southern party of the Stefansson expedition was recently reported (see the *September Review*, p. 232). From Bathurst Inlet Radford had planned to continue west along the coast to the mouth of the Mackenzie and thence to Fort McPherson and Dawson, hoping to reach New York early in 1913.

A progressive account of his expedition, as reported in his letters to the Society, will be found in the *Bulletin of the American Geographical Society*, as follows: 1909, p. 624; 1911, pp. 134 and 777; 1912, pp. 46-47 and 600-601; 1913, pp. 134 and 924-925.

Exploration of the Region between Athabaska and Great Slave Lakes. In approximate figures 850,000 square miles or one-quarter of the total area of continental Canada is unexplored country. One of the largest of the unexplored "blocks" was the eastern portion of the territory between Lakes Athabaska and Great Slave. The Canadian Geological Survey now publishes the report of a reconnaissance made across it in 1914 (Charles Camsell: *An Exploration of the Tazin and Taltson Rivers, North West Territories, Geol. Survey of Canada Memoir 84*, Ottawa, 1916). Heretofore the only written record of the region was that by Samuel Hearne, who passed through in 1772 on his return journey from the successful trip to the Coppermine River. A new edition of his account, "A Journey from Prince of Wales Fort in Hudson's Bay to the Northern Ocean," was published in 1911 by the Champlain Society. Hearne's map and description have served practically all Canadian map makers until very recently. The newest maps, however, contain modifications and additions based on information from H. V. Radford, the explorer lately killed by Eskimos at Bathurst Inlet, to whom reference is made in the preceding item. It is not known whether he gained his material by personal experience or through Indian informants. King, who accompanied Back in his explorations of the early thirties, published an Indian route map and description followed in part by the Survey expedition.

The region, comprised largely by the basin of the Taltson River, is typical Laurentian Plateau country. Travel in summer is possible only by canoe. During the journey down the Taltson and Tazin Rivers the Survey party had to make forty portages and run "dozens of rapids." Bare rock surface exhibiting signs of intense glaciation is everywhere the characteristic feature. The only considerable area of sedimentary material is found towards the mouth of the Taltson River, which there cuts through an ancient delta of the Slave River. On the west the region borders the great highway to the Mackenzie, but its lack of natural resources have closed it to interest in the past and will probably continue to do so in the future. Timber is small and stunted; agriculture is precluded by the absence of soil; and, though the waters abound in fish, game is scarce save during the southward migration of the caribou. The mineral possibilities are unknown. The small Indian population belongs to two tribes of Athabaskan linguistic stock, the Caribou Eaters branch of the Chipewyans, and the Dogribs. The latter appear to have absorbed or dispossessed the former inhabitants, the Yellow Knives, or Copper Indians. The movements of this nomadic population embrace a summer visit to one or another of the trading posts, Fort Smith, Fond du Lac, Chipewyan, or Resolution for the receipt of the annual government grant; an autumn gathering about the headwaters of the Taltson to hunt the southward-migrating caribou on the southwestern fringe of the Barren Grounds; and a winter return to the trading posts at Christmas and Easter to take part in the religious festivals, for all the natives now belong to the Roman Catholic church.

Forest Fires and Conservation in the Ontario Clay Belt. In northern Ontario is a belt of country underlain by clay and marked by excessive moisture and a short growing season. The settlers have tried to reduce the moisture and lengthen the growing

season, at the same time that they cleared the land for agriculture, by burning the forest, especially along the line of the Temiskaming and Northern Ontario Railway. To this action the Canadian Forestry Association and others make protest. The fires spread to the "absolute" forest land, useless except for growing trees, and almost irreclaimable for forestry once the humus has been burnt out of the thin soil. The settler contends that the clay belt, one of the few extensive tracks of potentially arable soil in northern Ontario, should be cleared as soon as possible and at minimum cost for immediate crop purposes. Thus the lumberman and the farmer in this frontier region have conflicting interests strongly reminiscent of the differences in our own West between cattlemen and sheep herders. Investigation is under way, and the case of the clay belt soils and forests in relation to agriculture promises to have scientific treatment (Burning Off the Claybelt, *Canadian Forestry Journ.*, April, 1916, pp. 468-470. For a reference to the location and character of the clay belt see R. W. Brock: *The Physical Basis of Canada*, pp. 9-91 [ref. on p. 64] in Vol. 9 of "Canada and Its Provinces" edited by Adam Shortt and A. G. Doughty, Toronto, 1914.)

The Florida State Census and 1916 Map. Beginning in 1885 the state of Florida, like a few others, has taken a census every ten years, midway between the federal censuses. The report for 1885 is said to have been a very small affair, perhaps a single sheet, giving only the total population by counties. That for 1895 is a pamphlet of about fifty octavo pages. The third census, taken in 1905, covered population, agriculture, and manufactures, and its report, published jointly by the Secretary of State and the Commissioner of Agriculture, comprises 304 pages.

The report for 1915 was published about the middle of 1916, by the Commissioner of Agriculture, as an octavo pamphlet of 78 closely printed pages. It covers population only, crop statistics being given in recent years in the biennial reports of the agricultural department. It begins with a four-page sketch of the history of Florida and a condensed summary of changes in county boundaries from 1821 to date. The tables include population by counties at each census from 1830 to 1915; the same grouped by five more or less arbitrary divisions, with calculations of the percentage of whites, density of population, and rate of increase between censuses, for each division (this table mostly prepared by the undersigned while in Tallahassee last fall); population of counties by race, sex, and age, illiteracy, nativity, etc.; population of minor civil divisions by race and age groups; deaf, dumb, and blind persons and centenarians, by counties; and population of cities and towns, by race, with comparisons with two earlier censuses. The areas given for the counties correspond with those in the government census of 1900, except where there have been subsequent changes, and they are remarkably inaccurate in some cases.

The schedules used in 1915 called for no specific information about marital condition, and consequently no statistics on that point are given. Some of the data gathered were not utilized, perhaps for lack of funds, namely, the number of families, the months of birth, and the state or country in which each person and his parents were born, except that the native and foreign-born population are separated in two of the tables. (The government census of 1880 gave the population of each county in the United States by state and country of birth, but since then this interesting information does not seem to have been given for areas smaller than states.) The population of minor civil divisions, including towns and cities, is not classified by sex, and thus the opportunity to analyze the effects of the migration of young men from old to new communities and check up some of the surprising figures in the government census of 1910 was lost.

It appears from the table showing the population of the state at different censuses (after correcting a few typographical errors) that the average quinquennial increase from 1880 to 1885, 1890 to 1895, etc., has been a little greater than that from 1885 to 1890, etc., which may indicate that the state censuses are the more complete, although the last one was taken in midsummer, when thousands of Floridians were away from home, while the last government census was taken in spring. The population on July 1, 1915, excluding inmates of the State Insane Asylum, was 921,618, an increase of 22.5 per cent in five years or 49.9 per cent in ten years, which is doubtless a more rapid increase than in any other eastern state during the same periods. The percentage of whites, 60.7, is higher than that in each of the five states from South Carolina to Louisiana inclusive.

This last report, unlike the preceding one, contains no map, but the lack is partly supplied by a fine large state map, 1:633,600, distributed gratuitously by the agricultural department about the same time. This map (which is revised every few years) does not show any subdivisions of counties, however, other than townships and sections, so that the statistics of population for minor civil divisions in the census report are of little value for geographical purposes.

ROLAND M. HARPER.

Committee to Expedite the Completion of the Topographic Map of the United States. At the third joint meeting of the Association of American Geographers and the American Geographical Society in New York on April 14 and 15, Professor W. M. Davis spoke informally on the desirability of accelerating the production of the topographic map of the United States (see the *May Review*, Vol. 1, p. 367). Since then a committee, organized by its chairman to promote this object, has sent out a circular letter to some two thousand addresses in all parts of the country. The committee consists of the following members: W. M. Davis, chairman, emeritus professor of geology, Harvard University, Cambridge, Mass.; A. E. Burton, secretary, dean, Massachusetts Institute of Technology, Cambridge, Mass.; Robert Bacon, president, National Security League, New York; Arthur H. Blanchard, consulting engineer, National Highways Association, professor of highway engineering, Columbia University, New York; G. P. Coleman, State Commissioner of Highways, Richmond, Va.; G. E. Condra, president, National Conservation Congress, State University, Lincoln, Nebr.; W. L. Darling, chief engineer, Northern Pacific Railway Co., St. Paul, Minn.; R. E. Dodge, president, National Council of Geography Teachers, Washington, Conn.; A. B. Fletcher, State Highway Engineer, Sacramento, Cal.; W. Cameron Forbes, of J. M. Forbes and Co., Boston, Mass.; John R. Freeman, consulting engineer, Providence, R. I.; W. O. Hotchkiss, State Geologist, Madison, Wis.; F. H. Newell, professor of civil engineering, University of Illinois, Urbana, Ill.; Joseph H. Pratt, State Geologist, Chapel Hill, N. C.; Wm. Barclay Parsons, consulting engineer, New York; Charles A. Stone, of Stone and Webster, Boston, Mass., president International Corporation, New York; Frank M. Williams, State Engineer, Albany, N. Y. The committee recognizes the excellent work of the U. S. Geological Survey, which has been carrying on the topographic survey of the United States for the last 35 years, and its appeal implies no criticism of this able organization. The outstanding fact is, however, that at the present rate of progress, in spite of liberal appropriations from Congress and generous co-operation from a number of states (see table), it would take about one

COST AND RATE OF PROGRESS OF THE TOPOGRAPHIC MAPPING OF THE UNITED STATES

YEAR ENDING JULY 1	APPROPRIATIONS		AREA IN SQUARE MILES		PERCENTAGE OF U. S. COMPLETED
	BY CONGRESS	BY STATES	SURVEYED	RE-SURVEYED	
1906.....	\$489,200	\$102,600	36,608	4,195	33.0
1907.....	459,200	121,800	32,495	1,847	33.8
1908.....	409,200	103,850	25,658	6,979	34.7
1909.....	384,200	100,000	23,831	11,200	35.5
1910.....	434,200	185,879	32,808	3,731	36.6
1911.....	434,200	156,376	23,496	6,490	37.4
1912.....	434,200	177,853	28,417	5,274	38.3
1913.....	434,200	161,267	18,731	3,987	38.9
1914.....	434,200	179,048	19,150	4,290	39.6
1915.....	434,200	186,800	20,527	3,048	40.2

hundred years to complete the mapping of the country. The handicap to many phases of our national development that such a situation entails does not need to be impressed upon geographers; and it is hoped that the appreciation of the value of the topographic maps which already exists among army officers, engineers, foresters, educators, and others will spread to include all who can derive benefit from their use. Every one who is interested in furthering the aim of the committee is urged to write to the secretary, Professor A. E. Burton, and to specify as definitely as possible the practical advantage that would accrue to him from the more rapid progress of our national map.

SOUTH AMERICA

The Lumber Markets of South America. This topic is discussed by Roger E. Simmons, Special Agent of the Department of Commerce, in two recently published reports (*Bur. of Foreign and Domestic Comm., Special Agents Series Nos. 112 and 117*, Washington, 1916). Argentina, Uruguay, and Brazil, especially the two first-named countries, constitute a valuable market for the lumber of North America. Uruguay is practically forestless, and, although Argentina possesses valuable forestal resources in the northern provinces, it is unlikely that these can ever replace the imported product. Apart from the cost and waste entailed in lumbering operations in the Chaco forests, the lumber obtained is in general only fitted for special purposes. With the exception of the Spanish cedar no tree has the equivalent usefulness of the imported softwoods—yellow pine, spruce, and white pine. The most valuable native species is the *quebracho*,

known for its high percentage of tannin and exported for such in the form of logs and extract. Other woods, as logs and rough forest products, find their way to the markets of the La Plata region, where is concentrated industry and commerce in both domestic and foreign lumber. Prior to the war, increase in the latter trade had led to notable change in the manner of shipment, i. e. the substitution of steamers for sailing vessels, whereby the cargo could be doubled or trebled and time reduced by one-half or one-third. A survey of Argentine forestal resources would include the woodlands occurring along a 1,300-mile stretch in western Patagonia. These forests, characterized by various species of beech and occasional conifers and araucarias, appear as five- to ten-mile strips along the watercourses. At present, with the exception of the extreme south that finds an outlet in the Chilean port of Punta Arenas, lack of communications precludes any attempt at development.

The Brazilian lumber industry is dissimilar in many respects from that of the La Plata region. Importation is distributed over a much greater area along the 4,000 miles of coast, though Rio de Janeiro and Santos account for the major part of the import. As in the La Plata district the chief imported wood is the southern yellow pine, locally known as the "pinho de Riga" from its resemblance to the resinous Russian pine that it has long since replaced, but there is also a not inconsiderable market for Scotch fir and Norway spruce from the Baltic countries. Brazil, with vast wealth in native forests, suffers the same impediments to development that are encountered in the Chaco. An exception to this is found in the recent exploitation of the so-called Paraná pine (*Araucaria brasiliensis*), a substitute for the northern conifers. This branch of lumbering, that was rendered possible by the construction of the Paraná railroad, presents an aspect entirely different from that of the rest of the industry. The characteristics of the araucarian forest are more favorable for lumbering, the species occurs in large and pure stands, and exploitation has been largely conducted by North American lumbermen.

The distinguishing feature of the lumber trade of the Pacific coast countries is the supremacy of the North American product. Punta Arenas, indeed, is the only port where European lumber is in greater demand. According to the latest statistics (1914) North America furnished 99 per cent of the imported lumber of Chile and a percentage only slightly less for Peru, where 80 per cent of the lumber of commerce is "piño de Oregon," Douglas fir. For both Chile and Peru the proportion between imported and domestic lumber also appears astonishingly high. This is particularly surprising with respect to the temperate forests of southern Chile, whose economic possibilities have long attracted attention (see, for example, "Account of the useful trees and shrubs of Chile, drawn up for the Court of Spain in obedience to the Royal Edict of July 20th, 1789, and forwarded with samples of the woods, etc., 10th December, 1792," given as a translation in the appendix to "Journal of a Residence in Chile," by Maria Graham, London, 1824). A careful examination of the resources of these forests seems to show that their intrinsic value has been overestimated. Little merchantable timber save wood for fuel is now obtained north of the old Indian frontier of the Bio-Bio. Much of the more accessible forest has already been cut for lumber or cleared for farming. The center of exploitation has moved 175 miles south during the last ten years; it is now located about Valdivia, where the best of the Chilean lumber is to be found. The Chilean beech forest does not, however, supply the best lumber of commerce. The *roble*, or so-called Chilean oak, the cheapest and most abundant native wood, shows two detrimental features common to other Chilean species: its weight impedes handling, and the difficulty in seasoning is troublesome in the rainy latitudes of southern Chile. The principal Chilean softwood is the peculiar and distinctive Chilean pine (*Araucaria imbricata*), a relative of the Brazilian species, the Paraná pine. Growing on the higher slopes of the Cordillera, it still plays an important part in the economy of the Indians of southern Chile. They make annual excursions to gather the seeds of the cone much as the seeds of piñon are gathered by the natives of the arid American West. From the lumbering point of view its chief value probably lies in its properties as a pulp wood.

With regard to the lumber trade Ecuador occupies a unique position among South American countries. No regular importation of foreign timber is made. The reason appears to lie in the heavy protection of the home industry, an attempt to revive its ancient importance, for in bygone days Guayaquil was famous along the whole coast as a shipbuilding center and an exporter of lumber.

On the northern coasts the situation is again different. Like other tropical countries Colombia and Venezuela possess forests extraordinarily rich in species but ill-favored for lumbering purposes by reason of the mixed and scattered nature of the stands, whence only a small percentage of the timber is merchantable. Venezuela, importing about 45 per cent of the lumber consumed, is a good market for the Southern yellow pine. In Colombia the demand for foreign woods is much less, but the trade is interesting

because of certain peculiar features. Prior to the war a considerable part of the trade was conducted through an intermediate market in Porto Rico where Southern yellow pine from the Gulf ports was exchanged for mahogany and Spanish cedar from the Colombian forests.

Bolivia and the Tin Industry. The canning industry of the United States consumes as much tinplate as is used for this purpose by the rest of the world combined. Most of the tin originates in the Straits Settlements, where the very high export duties on ore have necessitated exportation in the metallic form. Part is transmitted directly, part comes through Europe, chiefly through the United Kingdom. Yet in the western hemisphere is the world's greatest reserve of tin ores—the great deposits of the Eastern Cordillera of Bolivia. In 1912 Bolivia's tin ore shipment amounted to 38,614 tons and formed 66.8 per cent of the total value of exports. Of this quantity the United States took eight tons! In 1915 the estimated importation from Bolivia was still under one hundred tons.

Though known and used from time immemorial, Bolivian tin has only figured in the world's markets during the last twenty years. Prior to the last decade of the nineteenth century, Bolivia's vast mineral resources had but one expression—silver. Depreciation in the value of this metal and increasing industrial demand for tin are revolutionizing Bolivian mining. Abandoned silver mines have been reopened for tin, great dumps around the old shafts worked over and new mines sunk, and the prospects are encouraging. Oruro, in the geographical center of the tin belt, highly developed during the "silver" days and possessing superior means of communication, is also the economic center. North, near La Paz, and south, at Chorolque, are other important fields. Of individual mines the Monte Blanco of Inquisivi are among the most famous. Here one of the lodes, six to nine feet wide, outcrops for a thousand feet on the mountain side at an elevation of over 16,000 feet. It carries ore of 12 per cent ley— $1\frac{1}{2}$ to 2 per cent is considered rich in Cornwall—with occasional pockets of pure cassiterite. Special interest attaches to this group of mines from the up-to-date methods and machinery employed, for it is one of the properties of that romantic figure of Bolivian mining—Don Simon Patiño, the "Tin King" (*Commerce and Finance*, No. 46, Nov. 17, 1915, New York; see also Paul Walle: *Bolivia*, 1914, Chapter 19).

The recentness of the development and the geographical inertia of the industry have been seconded by economic and industrial limitations. Unlike the Malaysian ore, the Bolivian product contains ferruginous impurity, unremovable by the usual processes of smelting and highly detrimental to its use for plating. But the shock and stimulus of the European war have made themselves felt in this as in other industries of the western hemisphere. Bolivia, too short of motive power to smelt her ores, has entered into agreement with certain American capitalists for the shipment of ores to this country. There they will be smelted by a new electrolytic process in the works at Perth Amboy, N. J., now being erected for the purpose. The establishment of such a current of trade should prove beneficial to a far-reaching degree as a foundation for the establishment of credit and the extension of general commerce between the countries concerned (Bolivian Tin in the United States, *Bull. Pan American Union*, Feb., 1916; *Board of Trade Journal*, Nos. 999 and 1004, 1916). We may look for a marked rise on the figures of 1912, when Bolivia's commerce with the United States comprehended 9 per cent of the imports and one-half of one per cent of the exports. (See also *The World's Tin*, *Commercial America*, Vol. 12, No. 9, Philadelphia, 1916.)

EUROPE

Geographical Instruction in Great Britain. The growth of geographical education in Great Britain has lately been outlined by Dr. Scott Keltie in the *Geographical Teacher* (Thirty Years' Progress in Geographical Education, No. 38, Vol. 7, Part 4, London, 1914) and the *Scottish Geographical Magazine* (A Half-Century of Geographical Progress, Vol. 31, 1915, No. 12). Under the auspices of the Royal Geographical Society, Doctor Keltie was himself a prime initiator of the new geographical movement that began a little over thirty years ago with an investigation into the position of geography in education. Following the investigation, the stimulus and financial support of the Royal Geographical Society obtained for geography a recognized place in the universities—first in Oxford, where a notable beginning was made under the guidance of Mackinder, a little later in Cambridge and London, and subsequently in other universities and colleges, until now geography has an academic standing in practically every center of higher education. Its university status may be found in detail in the *Geographical Teacher* (Geography in British Universities, No. 37, Vol. 7, Part 3, 1913): the several syllabuses show the breadth of the instruction. By degrees the new geography

permeated from the colleges to the secondary and primary schools. The Geographical Association, organized in 1893 and now numbering over a thousand members, has afforded material aid by its investigations and recommendations and by its publications, including, since 1901, the *Geographical Teacher*. By 1905 the Board of Education had been aroused to a need for geographical education in the secondary schools. The new regulations of that year required the devotion of a specified amount of time to regular work in geography. Now geography is provided for in a four years' course intended to cover a complete world survey. In primary education less has been accomplished because of the difficulty in securing properly trained teachers. The fault lies chiefly with the training colleges, where until very recently geography figured in the program—often merely nominally in combination with history. Since 1913 geography has been promoted to a position of general and definite instruction.

Geography has thus secured a place in scholastic curricula: the future work of the teacher lies in the interpretation of its broad and far-reaching aims. An important trend of this interpretation appears in two recent articles by Dr. H. J. Fleure of the University College of Wales, Aberystwyth. "Suggestions for Investigations in Human Geography in Britain" (*Geographical Teacher*, No. 37, Vol. 8, Part 3, 1913) outlines a scheme for local geographic study. Its striking interest lies in the morphological standpoint taken. The point of view is discussed in the second paper, "Regional Surveys in Relation to Geography" (*ibid.*, No. 42, Vol. 8, Part 2, 1915), originally delivered as an address at the Imperial Institute in connection with Professor Geddes' Provisional Committee for the Development of Regional Surveys. A plea is made for humanistic treatment, under which geography can be made "a potent spiritual influence, promoting refinement of thought and breadth of appreciation, and thus contributing most effectively to good citizenship."

Atmospheric Pollution in England and Scotland. The results of observations made with a standard type of dust and soot collecting gage in English and Scotch towns are interesting. The maximum fall of soot and dust was recorded in Oldham, where the amount was 31.2 metric tons per square kilometer per month. Manchester comes second, with 26.8 metric tons. The Oldham fall is equivalent to 957 tons (British?) per square mile per annum. The figure for Sheffield is 21.7 metric tons per square kilometer per month. Our own Pittsburg has 33.6.

R. DEC. WARD.

Navigation in the White Sea. The conditions affecting navigation in the White Sea—a subject which the war has made of vital importance to Russia (see "Russia's War-Time Outlets to the Sea," in the *February Review*, Vol. 1, pp. 128-132)—are discussed by Monsieur Gilinsky in the *February*, 1916, number of the *Bulletin of the Imperial Russian Technical Society*, whose article is summarized by J. Viehniak in the June 15 issue of the *Revue Générale des Sciences* (p. 330).

According to this article the White Sea is far from being inaccessible to all-year traffic. The summer freedom from ice continues until January (see also, below, note on "Ice Conditions in the Arctic Seas in 1915.") About this time, ice begins to form along the mouth of the rivers flowing into the sea and gradually extends outwards toward deep water. But this ice rarely exceeds an average of 20 inches in thickness and it is generally porous and brittle. Winds and currents combine to maintain it in a crushed condition. The ice banks of the open sea also make their appearance at the beginning of the year but they are seldom continuous, and navigation is possible during the months of February and March, when freezing attains its maximum.

The real dangers to navigation begin when the melting period sets in. Even then, however, the use of ice-breakers makes the White Sea harbors accessible to commerce. In spring, as a rule, the brittleness of the ice becomes marked in the upper layers, while the submerged portions acquire greater strength on account of the lower temperature then prevailing in the lower sections of the water. By May, however, the White Sea is free of ice. This often happens earlier, especially whenever winds from the west or southwest have prevailed in April.

According to recent *Commerce Reports* (July 24, 1916) a great rush of steamers to White Sea ports occurred this season. The ports of Soroka and Kem, both of which are now connected by broad-gage tracks with Petrograd, are fast becoming busy centers of shipping. Archangel, however, leads, owing to better connections with inland districts. It is estimated that over 2,700,000 tons of cargo will be transported inland from this port during the present season.

A Projected Southern Transcontinental Railroad in Europe. Attention is called to the projected Simplon-Belgrade railroad route in an article on "The Adriatic Slavs and the Overland Route to Constantinople" by Sir Arthur Evans in the *April*, 1916,

number of the *Geographical Journal*. The line will pass through non-Teutonic territory, Switzerland, Italy, and the Slavic districts of Austria being traversed until Belgrade is reached. East of the Istrian peninsula two routes, passing respectively by Laibach or Fiume, are available. Railroads are now in operation along the greater part of the stretch, and the linking of the necessary connections can be undertaken without difficulty.

The establishment of this line would revive the ancient route between the East and West which followed the Save valley. It is estimated that thirty-nine hours will suffice to bring the tourist from London to Belgrade—a saving of five hours over the time taken by the Orient Express before the war. Another advantage which might appeal to travelers is that this line attains the sea midway, at Venice and Fiume.

Now that continental connection with the Greek system of railways has been established (see the September *Review*, p. 227), the construction of this new transcontinental line would link the port of Piræus with a rapid route to England. From the Greek harbor to Port Said the time of travel is approximately twenty hours less than from Brindisi. A future rapid route to the East might be created by these connections and serious competition to the line following the Danube valley created.

The Quaternary Snowline in the Iberian Peninsula. In connection with glacial field work during the summers of 1914 and 1915, Hugo Obermaier and Juan Carandell made observations on the past and present snowline of the mountain ranges of Spain and Portugal, the results of which they have recently published (*Datos para la Climatología Cuaternaria en España, Bol. Real Soc. Españ. de Hist. Nat.*, Vol. 15, 1915, pp. 402-410, Madrid). Two suggestive profiles through the Iberian Peninsula are presented, one from east to west approximately along the 41st parallel, and the other from north to south along the 5th meridian west of Greenwich, the latter extended so as to include the Atlas ranges of Morocco. The profiles show that the Quaternary limit of perpetual snow increased progressively in elevation from north to south in the peninsula, and from east to west, the former in keeping with the latitudinal effect on climate, the latter due to the change from the marine climate of the west coast to the dry land-climate of the interior.

The profiles are summarized in the following two tables.

E-W PROFILE			N-S PROFILE		
RANGE	MAXIMUM ELEVATION	ELEVATION OF QUATERNARY SNOWLINE	RANGE	MAXIMUM ELEVATION	ELEVATION OF QUATERNARY SNOWLINE
Serra da Estrella.....	1991 m	1400-1500 m	Picos de Europa.....	2672 m	1400-1500 m
Sierra de Béjar.....	2401 m	1800 m	Sierra de Guadarrama	2406 m	2000-2050 m
Sierra de Gredos.	2592 m	1800-1900 m	Sierra de Gredos.....	2592 m	1800-1900 m
Sierra de Guadarrama.	2406 m	2000-2050 m	Sierra Nevada.....	3481 m	2400-2500 m, N slope
Montes Universales...	1610 m	{ mountains too low to be within reach	Er Rif.....	2200 m	2600-2700 m, S slope
Sierra de Javalambre.	2020 m		Middle Atlas.....	4000 m	mountains too low
Peña Golosa.....	1813 m				3280 m, N slope
			High Atlas—		3480 m, S slope
			Ari Ayash.....	4250 m	3700 m, N slope
					3900 m, S slope
			Tizi-n-Tamdjurt...	4600 m	4400 m, N slope
					4500 m, S slope

In the second table, the interruption of the progressive rise due to the lower elevation of the Sierra de Gredos snowline is a local variation due to the fact that this range is higher than the Sierra de Guadarrama, which is in the same latitude, and consequently carries a larger and more persistent snow cover.

The values with regard to the Atlas ranges are hypothetical. They have been obtained by prolonging southward the ascending line which passes through the snowline of the Iberian ranges. In addition, allowance has been made for the greater elevation of the snowline on the southern as compared with the northern slopes and for the effects of increased dryness on approach to the desert. The known difference for the Sierra Nevada, 200 meters, has been applied to these ranges, with the result given in the table. These figures, pending field work, afford a working approximation, which, incidentally, is in the nature of a compromise between the view which assumes that the Atlas ranges bore no glaciers in Quaternary time and the opposite assumption that they were glaciated down to a level of 1,800 meters.

ASIA

Strategic Geography of the Gallipoli Campaign. The southern shores of the Dardanelles and the entire Troad region form the subject of an illuminating article contributed by Dr. Walter Leaf to the June number of the *Geographical Journal* (pp. 401-421). Having had the advantage of personal experience on the site which he describes, Doctor Leaf is able to show all the more clearly how intimately the problem of forcing the straits depended on their physical features.

A fact rendered obvious by experience, and one which the geographer might have pointed out long before any action was undertaken, is that no naval effort could meet with success against the obstacles placed by nature in this region. The passage of a narrow tortuous waterway, 30 miles long, guarded by a complicated system of abrupt heights, as well as by a strong current down which mines float readily, was an impossibility. Among the difficulties which lay in the way of the Franco-British expeditionary force were a system of Tertiary cliffs running between Lampsacus and the entrance of the straits. This formation consists of clayey and sandy marls. While not exactly precipitous, they are steep enough to prevent landing except in occasionally intervening short stretches of coastal plain. These clays and marls become a real obstacle in the western approaches to the Troad, where they guard the southern coast from the mouth of the Dardanelles. Besika Bay, on this coast, is available as a landing station, but its value as the base of an expeditionary force is annulled by a line of marches which render advance towards the plain of Troy extremely hazardous. The only practical approach to the plain of Troy, according to Doctor Leaf, is found on the north coast of the Troad near the entrance of the Dardanelles. The military history of the region is instructive on this point, and enlightening references to the procedure adopted by ancient armies abound in the article.

A New Siberian City. Progress in the settlement of Siberia is the theme of two articles ("Rapid Growth of Siberia" and "Siberian Village Life") in the Russian Section of the *London Times* for August 26, 1916. The particular case reviewed is the extraordinary growth of Novo-Nikolayevsk on the Ob River where it is crossed by the Trans-Siberian railroad. The recent completion of the Altai railroad, which runs from Novo-Nikolayevsk to Barnaul, with a branch to Biisk on the upper Ob, and to Semipalatinsk, thus tapping rich agricultural and mining districts, has further stimulated the city's growth. The writer, who visited the spot in 1898, then found that "a small railway car, dismantled and propped up alongside the track, did duty for a railway and telegraph station," while "about one mile away on the river's bank a tiny collection of unpainted log huts" represented the sole population of the district. Now on this site is a town of 100,000 people, and, unlike most of the older Siberian cities, it is essentially modern. It has well-paved streets, electric lighting, and many fine stone buildings. Land purchasable in 1898 for 1 rouble per desiatin (2.7 acres) now sells at half as much per square foot. Novo-Nikolayevsk owes its growth to its position as a "window to Europe" for the vast Altai region. Its citizens hopefully anticipate further progress with construction of the projected railway line from the lower Ob to the White Sea or direct to the Arctic, when the town will naturally become a transshipping center for the upper river.

Foreign Commerce in the Philippines. With a total value of a little under \$61,500,000, representing an approximate gain of 25 per cent on the average of the last five years, the Philippine export trade of last year constitutes a record (advance report on Philippine Foreign Commerce in the Year Ending June 30, 1916, Bureau of Insular Affairs, Washington, D. C.). Excepting copra, which was still suffering from the effects of the droughts and typhoons of the preceding season, all important export products showed an increase both in amount and value. This was notably the case with hemp and the allied fiber, maguey, and sugar. The increase in sugar is especially remarkable, the export for the first time exceeding the maximum of 1893. The sugar industry, decadent during the early days of American control, began to recover in 1909 under free trade with the United States and has lately been helped by war conditions. To the stimulus of the latter may be accounted the increased shipments to the Orient and the entirely new trade with the United Kingdom. The import trade, though improved over that of the previous year, remained below normal. The only important gains were made with the United States, Japan, and French Indo-China. The last named is attributable to heavy imports of rice to meet the shortage following the drought of 1914, and the increased Japanese business is partly due to the coal trade taken over by that country from Australia.

POLAR REGIONS

Ice Conditions in the Arctic Seas in 1915. Ice conditions in the Arctic were not uniform in 1915, according to a report by C. I. H. Speerschneider entitled "The State of the Ice in the Arctic Seas, 1915," recently issued by the Danish Meteorological Institute in its *Nautisk Meteorologisk Aarbog* for 1915.

Around Spitzbergen navigation was somewhat more arduous than in previous years. Spring opened with the promise of a severe icy season. In June the ice along the west coast covered an area larger than that of the island. According to sealers' reports the floes were packed so closely that they prevented approach to the fiords. The coast was blocked farther north than Prince Charles Foreland. These conditions are rarely witnessed; since the inauguration of the institute's investigations in 1897, it has been a rare occurrence for the ice to extend west of 10° E. A slight amelioration was observable in July, although all the west coast was ice-bound in August. Relatively favorable conditions existed on the north coast, but sailing north around North East Land or through Hinlopen Strait was impossible.

An improvement in White Sea conditions was attained in 1915 by the steady use of ice-breakers. Navigation was thus open till the end of the year. The ice in Barents Sea was normal except around Bear Island. An unusual southerly extension of ice is recorded for the period between April and June. Not until the end of this last month was the water around the island open.

In Iceland, polar ice east of Cape North hindered steam navigation in and out of the northwest fiords in the early spring of 1915. The ice then spread northward to such an extent that in June traffic round Cape North and adjacent stations was blocked. It was only in the last days of July that the sea was open on the north coast of Iceland. This favorable condition prevailed for the rest of the year.

The eastern coast of Greenland was normal. Ships had easy access to Angmagssalik station from the autumn of 1914 to August, 1915. On the northern part of the west coast the land floes of April and May gave way to open ice from June onward, and the release of icebergs became marked in July. In Smith Sound a severe winter was experienced, but the ice commenced breaking earlier than usual in May.

The Newfoundland Banks had less ice than in 1914. The southernmost iceberg was seen on May 5th in 39° 53' N. and 47° 24' W. Very few icebergs reached 40° N., however.

North of Alaska, conditions in the Beaufort Sea were normal. In spring the sea was frozen over near Banks Land. The passage through Bering Strait was free of ice during fall.

Probable Loss of Two Russian Arctic Expeditions. The probable fate of the Rusanoff and Brussiloff expeditions has already been referred to (*Bull. Amer. Geogr. Soc.*, Vol. 47, 1915, pp. 53-54, 288, and 961). Both were sent out under the auspices of the Archangel Society for the Study of the Russian North. The former left Spitzbergen in the motor boat *Hercules* in August, 1912, for Nova Zembla; the latter left a month later. After two years had elapsed without news from either, the Russian government sent out the Norwegian vessel *Eclipse* under Captain Sverdrup in July, 1914, to rescue the missing expeditions. The *Eclipse* returned to Archangel in September, 1915, without any news of the missing expeditions. Since then another year has passed without news, and the Russian government has therefore just announced through the medium of the Canadian government (press despatch from Ottawa dated September 8) that it officially considers both expeditions lost.

WORLD AS A WHOLE AND LARGER PARTS

The Japanese Abroad. A critical interpretation of Japanese emigration statistics, presented by R. Biasutti in the April-May, 1916, number of the *Rivista Geografica Italiana*, reviews the conditions under which the movement is taking place. The same topic was discussed in detail in an article entitled "Die Japanische Auswanderung" by Dr. Ernst Schultze in *Petermanns Mitteilungen* for April, May, July, and August, 1915 (see comment on map in *Bull. Amer. Geogr. Soc.*, Vol. 47, 1915, p. 727). Basing himself on figures for the year 1911, Biasutti assumes that about 800,000 Japanese are now scattered outside their native land. Of these one-half have invaded Sakhalin, Korea, and Formosa. In Asiatic countries the inflow of Japanese residents has become distinctly a phase of economic penetration. China alone contains over 130,000 Japanese immigrants, of whom a good half consists of women. Inasmuch as the ratio of male to female colonists is the criterion of permanent or temporary settlement, it follows that the Japanese generally go to China with the intention of taking up a permanent abode. On the eastern coast of the Pacific, however, the proportion of women among the immi-

grants is relatively low, the highest percentage being 23.7 for Mexico, while for Peru it is as low as 3.8. This figure becomes 12 per cent in the United States and increases to 17 per cent in Canada. In the Hawaiian Islands it attains 36.5 per cent.

The importance of the Japanese penetration in China can be realized from the fact that 60 per cent of the total number of emigrants in Kuantung and the Manchurian sphere of Japanese influence belong to the leading and industrial or commercial classes. The first-named of these localities contains between 45,000 to 50,000 Japanese inhabitants, while the second follows closely with about 40,000. Within the Russian sphere of influence in Manchuria the number of Japanese dwindles rapidly and rarely exceeds 2,000.

Anglo-Saxon America as a field of colonization for the Japanese is closed. Not so, however, with Latin-America, which the Asiatic islander is free to enter, but where he rarely elects to become permanently domiciled. Brazil alone, among the Latin-American states, has attracted the Japanese farmer. In the countries of Spanish speech he usually appears as a trader or a laborer. An agriculturist in Brazil, he also becomes a settler, the fact being revealed in the percentage of Japanese women in this republic—a figure which in 1911 was as high as 41. Most of this Japanese colonization in Brazil is confined to the state of São Paulo and is due to the possibility of rice cultivation.

Uniform Pan-American Monetary Unit. A recent issue of the *South American Journal* (Vol. 80, No. 24, London, 1916) discusses the Pan-American monetary unit proposed at the conference lately held in Buenos Aires. The proposal was to create a standard coin, equivalent in value to one-fifth of the United States dollar, for general circulation in the countries of the Pan-American Union. Apart from theoretical considerations as to the desirability of such a measure there are pronounced practical difficulties dependent chiefly on the debased condition of the monetary currency in many of the Latin-American republics. The great development of Argentina's resources has indeed placed that country on an unusually favorable footing among her sister republics, but it is exceptional. Most of the smaller countries, especially some of Central America, are still in states of indebtedness and monetary trouble from which they can only emerge by an economic progress that must inevitably be of slow growth.

PHYSICAL GEOGRAPHY

Fluctuations of Solar Radiation. The importance of fluctuations of solar radiation—regular or irregular, in long periods or in short periods—in relation to “changes” of climate, gives a distinct geographic interest to such work as that carried on by the Astro-Physical Observatory of the Smithsonian Institution. In his Annual Report for the year ending June 30, 1915, Dr. C. G. Abbot, the Director, points out that short-period fluctuations of solar radiation were large in 1913, but small in 1914. In association with these rapid, irregular fluctuations there are variations of contrast of brightness between the center and edges of the sun's disk. Greater contrast is associated with greater solar radiation and with numerous sunspots in the general march of the sun's activity; lesser contrast is associated with greater solar radiation in the march of the quick, irregular fluctuations of the sun's emission. Two causes of solar variation seem to be indicated by this paradox. The long period changes may be caused by changes of the sun's effective temperature attending the march of solar activity. The quick fluctuations may be ascribed to changes in the transparency of the outer solar envelopes.

R. DEC. WARD.

GEOGRAPHICAL NEWS

Weather Charts of the North Atlantic Ocean. Beginning with the issue for August, 1915, the successive numbers of the *Monthly Weather Review* have contained charts showing the weather conditions over the North Atlantic Ocean, for the same month, but one year previously. These charts give the averages of pressure, temperature, and prevailing wind directions at Greenwich mean noon, together with the location and courses of the more severe storms of the month. The discussion summarizes the more important meteorological conditions, with special reference to the storms which crossed the North Atlantic.

R. DEC. WARD.

PERSONAL

MR. O. P. AUSTIN, assistant chief of the Bureau of Foreign and Domestic Commerce, will give a lecture on South America on November 7 at Public School 132, Manhattan.

MR. F. W. COWIE, chief engineer of the Harbour Commissioners of Montreal, read a

paper on "Canadian Ports" at the Fifth Annual Convention of the American Association of Port Authorities held in Montreal on September 13, 14, and 15.

DR. P. H. GALLÉ of the Dutch Meteorological Office read a paper on January 29 before the Academy of Sciences of Amsterdam entitled "On the Relation Between the Summer Changes of the North Atlantic Trade Winds and Winter Temperature in Europe."

MISS CAROLINE W. HOTCHKISS of the Horace Mann School, New York, will give a course of five lectures on "Great Cities" at the 96th Street Branch of the New York Public Library, Manhattan. The dates and subjects of the lectures are as follows: October 2, Gary, the City Made to Order; October 9, New Orleans and Its Debt to the Mississippi; October 16, Denver the Gift of the Plains and the Mountains; October 23, San Francisco by the Golden Gate; October 30, Portland and the Columbia River. The subject of these lectures is substantially that dealt with in Miss Hotchkiss' book "Representative Cities of the United States" (reviewed in the *Bull. Amer. Geogr. Soc.*, Vol. 46, 1914, p. 776).

SIR JOHN KENNEDY, consulting engineer of the Harbour Commissioners of Montreal, read a paper entitled "St. Lawrence River and Canals of Canada" at the Fifth Annual Convention of the American Association of Port Authorities, held in Montreal on September 13, 14, and 15.

DR. WILLIS T. LEE of the U. S. Geological Survey gave an address on "The Birth of the Rockies" before the Colorado Academy of Sciences in Denver on September 26.

PROFESSOR EMMANUEL DE MARTONNE, professor of geography in the Sorbonne, arrived in New York on September 18 to take up his work as visiting French professor at Columbia University. He will give courses on European physiography under the auspices of the Department of Geology. His offerings will include two courses of four lectures each, delivered in French and open to the public. The subjects and dates of these lectures are: (1) *Montagnes du Centre et Sud de la France*, 4.15 P. M. (Massif Central) October 19 and 26, November 2, and (French Alps) November 9; (2) *Plaines et Champs de Bataille du Nord de la France*, 8.15 P. M., November 15, 22, and 29, and December 6. In connection with this series of lectures, there will be conferences, open to advanced students, in which a detailed study of certain phases of the work will be made. Professor De Martonne will also co-operate with Professor D. W. Johnson in a course on the physiography of Europe, in which the Alps, the Carpathians, and south-eastern Europe will be discussed by Professor de Martonne.

PROF. E. S. MOORE of the Pennsylvania State College lectured before the Mining and Geological Society of Lehigh University on April 13 and before the students of the department of geology at Cornell University on April 26 on "Some of the Mining Fields of Australia and India."

DR. FRANCIS ROLT-WHEELER will give a course of six lectures at Public School 61, Manhattan, dealing with the activities of various government bureaus. The dates and subjects of his lectures are as follows: October 6, U. S. Geological Survey; October 20, U. S. Forest Service; November 3, U. S. Reclamation Service; November 17, U. S. Bureau of Fisheries; December 1, U. S. Bureau of Indian Affairs; December 15, U. S. Immigration Office.

MR. A. D. SWAN, consulting engineer of Montreal, read a paper on "Some Ports on the West Coast of South America, and Their Future Development" at the Fifth Annual Convention of the American Association of Port Authorities held in Montreal on September 13, 14, and 15.

DR. J. J. H. TEALL, F.R.S., late director of the Geological Survey of Great Britain, received the honor of knighthood on the occasion of King George's birthday.